

REMARKS

Claims 1-3, 5-11, 18, and 21-32 are currently pending in the subject application and are presently under consideration. Claims 1-7 and 18 stand rejected. Claims 8-11 are allowed. Please cancel claims 12-17, 19, and 20, since they have been withdrawn from consideration in accordance with an earlier restriction requirement, and may be addressed in another application. A clean version of all pending claims is found at pages 2-7. Claims 1-3, 5, 6, and 18 have been amended herein. A marked-up version of claim amendments made herein is found on pages 11-15 of this Reply. Claim 4 has been canceled. New claims 21-32 have been added herein for consideration. No new matter has been added.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Objection to the Drawings

Figure 7a was objected to by the Draftsperson under 37 CFR 1.84(g) for an unacceptable margin. Applicant's representative will provide the corrected drawing at a later date in accordance with allowance procedures.

II. Rejection of Claims 1-3, 5-7, and 18 Under 35 U.S.C. §102(e)

Claims 1-3, 5-7, and 18 are rejected under 35 U.S.C. §102(e) as being anticipated by Twerdochlib *et al.* (US 5,146,776, disclosed in IDS).). It is respectfully submitted that the present invention, as recited in the subject claims, is not anticipated by Twerdochlib *et al.* because this reference fails to teach each and every element recited in

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claims 1 and 18, as amended, recite in part that the light modulating system including an obstruction modulator that varies an amount of light continuously received by the light receiving system as a function of vibration. Twerdochlib *et al.* neither discloses nor suggests the aforementioned limitations recited in independent claims 1 and 18, and the respective claims 2-7 that depend therefrom. In particular, Twerdochlib *et al.* teaches using a modulator that varies the frequency of pulses of light as a function of vibration, as compared to the subject claimed invention that varies the amount of light continuously received according to the amount of vibration.

Accordingly, it is readily apparent that Twerdochlib *et al.* neither anticipates nor makes obvious the claimed invention, and this rejection should be withdrawn.

III. Rejection of Claim 4 Under 35 U.S.C. §103(a)

Claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over Twerdochlib *et al.* as applied to claim 1 above further in view of an unidentified reference. Claim 4 has been cancelled herein without prejudice or disclaimer, and therefore this rejection is moot and should be withdrawn.

IV. New Claims 21-32

New claims 21-32 have been added to characterize a vibration sensing system with alternate language. Allowance of these claims is respectfully requested.

In particular, in one aspect of the claimed invention, the new claims emphasize that the light source, obstruction modulator and receiving device are all aligned along a common axis, as compared to Twerdochlib *et al.* that employs a light pipe to route light
obstruction modulator is secured directly to the housing, as compared to Twerdochlib *et al.* that employs an internal reed to attach the grid assembly to the housing. In yet another aspect of the claimed invention, the obstruction modulator is a homogenous structure placed into the light path around which light passes when vibration occurs, whereas Twerdochlib *et al.* requires a gridded structure through which the light passes to measure frequency.

V. **Conclusion**

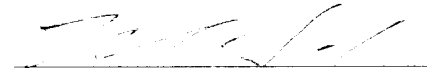
The present application is believed to be condition for allowance in view of the above amendments and comments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

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MARKED UP VERSION OF AMENDED CLAIMS

1. (Amended) A system for sensing vibration of a machine, comprising:
 - a light source for directing a beam of light;
 - a light receiving system for receiving at least a portion of the beam of light;
 - a light modulating system for modulating the light beam received by the light receiving system so as to correspond with vibration of the machine, the light modulating system including an obstruction modulator that varies an amount of light continuously received by the light receiving system as a function of vibration; and
 - a processing system operatively coupled to the light receiving system, the processing system processing the data received from the light receiving system to facilitate determining vibration of the machine.
2. (Amended) The system of claim 1[2], [the light modulating system including an]the obstruction modulator adapted to obstruct the beam of light so that only the at least a portion of the beam of light is received by the light receiving system.
3. (Amended) The system of claim 1[2], the obstruction modulator obstructing the light beam when the machine is vibrating.
5. (Amended) The system of claim 1[2], the light modulating system including a housing with a first opening for receiving the light beam, a second opening for passing

modulator being disposed within the housing and coupled to the housing by a cantilevered support arm.
6. (Amended) The system of claim 1[2], the obstruction modulator being a physical component of the machine.

7. The system of claim 1, the light receiving system outputting a modulated voltage signal indicative of vibration of the machine.

18. (Amended) A system for sensing vibration of a machine, comprising:
means for directing a beam of light;
means for receiving at least a portion of the beam of light;
means for modulating the light beam received by the means for receiving so as to correspond with vibration of the machine, the means for modulating including an obstruction means adapted to prevent passage of the light beam therethrough, the obstruction means varies an amount of light continuously received by the light receiving system as a function of vibration so that only the at least a portion of the beam of light is received by the means for receiving; and
means for processing the data received from the means for receiving to facilitate determining vibration of the machine.

21. (New) A system for sensing vibration of a machine, comprising:
a light source for directing a beam of light;
a light receiving system for receiving at least a portion of the beam of light;
a light modulating system for modulating the light beam received by the light receiving system so as to correspond with vibration of the machine, the light modulating system aligned along an axis extending between the light source and the light receiving system; and
processing system processing the data received from the light receiving system to facilitate determining vibration of the machine.

22. (New) A system for sensing vibration of a machine, comprising:
a light source for directing a beam of light;
a light receiving system for receiving a portion of the beam of light;
a light modulating system for modulating the light beam received by the
light receiving system so as to correspond with vibration of the machine, the light
modulating system aligned along an axis extending between the light source and the light
receiving system, the light modulating system including an obstruction modulator
adapted to obstruct the beam of light so that only the portion of the beam of light is
received by the light receiving system; and
a processing system operatively coupled to the light receiving system, the
processing system processing the data received from the light receiving system to
facilitate determining vibration of the machine.

23. (New) A system for sensing vibration of a machine, comprising:
a light source for directing a beam of light;
a light receiving system for receiving a portion of the beam of light;
a light modulating system in a housing for modulating the light beam
received by the light receiving system so as to correspond with vibration of the machine;
an obstruction modulator secured directly to the housing and adapted to
obstruct the beam of light so that only the portion of the beam of light is received by the
light receiving system; and
a processing system operatively coupled to the light receiving system, the
processing system processing the data received from the light receiving system to
facilitate determining vibration of the machine.

24. (New) The system of claim 23, the obstruction modulator secured to the
interior of the housing and conforming to the shape of the housing.

25. (New) The system of claim 23, the obstruction modulator comprising an
annular structure that allows the light beam to pass through the annularity.

26. (New) The system of claim 25, the light beam passing through the annularity in one direction.

27. (New) The system of claim 25, the light beam passing through the annularity in two directions.

28. (New) The system of claim 25, further comprising a light directing member for directing the light beam therethrough to the light receiving system.

29. (New) The system of claim 28, the light directing member including a reflective surface and an anti-reflective surface for directing the light beam to the light receiving system.

30. (New) The system of claim 25, further comprising a reflector for reflecting the light beam back through the obstruction modulator to the light receiving system.

31. (New) A system for sensing vibration of a machine, comprising:
a light source for directing a beam of light along a light path;
a light receiving system located in the light path to receive the light beam;
an obstruction modulator of homogenous structure located in the light path
interstitial to the light source and the light receiving system for modulating the light beam
received by the light receiving system, the degree of modulation corresponding to
vibration of the machine; and

a processing system operatively coupled to the light receiving system, the
processing system processing the data received from the light receiving system to
facilitate determining the vibration of the machine.

32. (New) The system of claim 31, the degree of modulation determined by the amount of light passing around the obstruction modulator to the light receiving system.